REMARKS

Claims 1, 5, 17 and 18 have been rejected under 35 U.S.C. §103(a) as unpatentable over Hollrock (U.S. Patent No. 3,662,978) in view of Driskill (U.S. Patent No. 3,662,975), while Claims 1 and 2 have been rejected as unpatentable over Bartel et al (U.S. Patent No. 6,056,076) in view of Hollrock. In addition, Claim 3 has been rejected as unpatentable over Bartel et al in view of Hollrock and further in view of Terada et al (U.S. Patent No. 4,645,159), Claims 6, 7, 9 and 10 have been rejected as unpatentable over Bartel in view of Hollrock and further in view of Mizuno et al (U.S. Patent No. 5,193,635), and Claims 8 and 12 have been rejected as unpatentable over Bartel et al in view of Hollrock and Mizuno et al, and further in view of Wilson et al (U.S. Patent No. 6,207,310 B1). However, for the reasons set forth hereinafter, Applicants respectfully submit that all claims of record in this application distinguish over the cited references, whether considered separately or in combination with other references.

The present invention is directed to a decentralized vehicle power supply system in a vehicle, which achieves a significant saving in efficiency in weight, and also saves on labor expenses in assembly of the vehicle. In particular, in a decentralized power supply system according to the invention, in place of the conventional centralized electric power supply (such as a centrally located battery), a fuel cell system is installed in, for example, each vehicle door, and is

collocated with the electrical consuming devices in the door, for which it serves as an exclusive dedicated power supply source, as shown in the drawing figure and discussed in the specification at page 3, lines 4-13 and at page 11, line 17 - page 13, line 10. In particular, the figure of the drawing shows a fuel cell stack and an exchangeable fuel cartridge 17 connected thereto, both of which are mounted in the vehicle door, collocated with a drive unit 9 of the window lift mechanism. (See page 11, lines 17-24.)

Fuel cell technology is well known. In particular, those skilled in the art will immediately understand the meaning of the term "fuel cell" to refer to an electrochemical device which is used to combine a fuel and an oxidant, in an electrochemical reaction, which continuously changes chemical energy directly into electrical energy. (See, for example, Webster's Ninth New Collegiate Dictionary.) Typically, the fuel used is hydrogen, and the fuel cell includes two chambers, a cathode and an anode which are separated by a membrane that is permeable to hydrogen ions. The latter migrate through the permeable membrane and are combined with an oxidant (typically ambient air), generating water as a byproduct. For each hydrogen ion which migrates through the membrane, an electron passes through an electrical circuit between a cathode and the anode, creating an electric current. The term "fuel cell" is a term of art which is immediately recognized by those skilled in the field.

The Hollrock reference, on the other hand, discloses a rocket powered aircraft ejection seat, which is equipped with a stowed helicopter rotor that can be deployed after ejection from an aircraft. The rotor is driven in turn by a small gas turbine engine which is stowed in the back of the seat and deployed upon ejection. (See Abstract; Column 5, lines 68-72; Column 6, lines 7-9.)

According to the disclosure at Column 6, lines 27-44 of Hollrock, fuel for the gas turbine engine 152 is contained in a fuel tank, which is not illustrated in the drawings, and is referred to in the disclosure as a "fuel cell". However, a person skilled in fuel cell technology would immediately recognize that the fuel storage in Hollrock et al does not constitute a "fuel cell" of the type recited in the claims of the present application (an electrical supply device), discussed in the specification of the present application, or as defined in the dictionary. In fact, it is apparent from the disclosure in Hollrock et al that the "fuel cell" located therein is nothing other than a fuel tank which stores fuel for the gas turbine engine 152. (See Column 6, line 30.) Those skilled in the art will of course recognize that a "small gas turbine engine" (Column 5, line 69), such as referred to in the specification of Hollrock in fact burns fuel in the form of a combustible material. Such a small gas turbine engine does not generate electricity, cannot be used as a fuel source, and therefore cannot constitute an electrical energy to operate electrical systems. Applicants therefore respectfully disagree with the statements at the bottom of page 2 of the Office Action, that Hollrock discloses

"at least one fuel cell...arranged for supplying electricity to electric consuming devices". In fact, the fuel supply of Hollrock is not a "fuel cell"; it does not supply electricity, and the gas turbine engine to which the fuel tank supplies fuel is not an electric consuming device.

The Bartel et al reference, on the other hand, discloses an electrical control system for a vehicle having electrically operated locks, an includes an emergency unit which may be built into each lock. As indicated in the Abstract, the emergency unit includes a power storage unit which is "continuously connected between the starter battery and the motor driver for the lock". (See also Column 3, lines 49-52.) The emergency energy source thus derives its energy from the vehicle battery or the vehicle alternator, to which it is continuously attached. (See Column 4, lines 11-15; Column 6, lines 9-13.) Upon failure of the primary power supply in the form of the starter battery 10, energy from the latter, which has been stored in the emergency energy source 19 can be used to operate the door locks.

It is apparent from the foregoing brief descriptions that neither the Hollrock reference nor the Bartel et al reference teaches or suggests a decentralized power supply system for a vehicle in which at least one fuel cell system is "electrically isolated from the other power generators of the power supply system, and is dedicated to supplying electricity to an assigned electric consuming device that is incorporated in a structural subassembly of the

vehicle", as recited, for example, in Claim 1. In fact, the Hollrock reference contains no fuel cell system at all in the sense in which the term "fuel cell" is used in both Claim 1 and in the specification of the present application.

Similarly, Bartel et al also fails to teach or suggest such a system, in that it contains no fuel cells, and in particular contains no fuel cells which are electrically isolated from other power generators of the power supply, etc., as noted previously.

The Driskill reference, on the other hand, merely discloses an auxiliary electrical generating system for a jet aircraft, in which compressed air is withdrawn from a jet engine and used to operate a pneumatic turbine which in turns drives a generator. Terada et al, has been cited only as teaching a power seat adjusting device which includes a motor; and Jirmann shows an air conditioning compressor which is powered by a fuel cell. Mizuno et al, on the other hand, teaches a fuel cell system including a reformer and a fuel storage tank, and Wilson et al teaches a fuel cell.

None of the latter references, summarized in the preceding paragraph, teaches or suggests any modification of either Bartel et al or Hollrock, which would yield the present invention. In particular, none of them suggests a decentralized power supply system in which a fuel cell is electrically isolated from other power generators of the power system, dedicated to supplying

electricity to an assigned electric consuming device and collocated with the electric consuming device in a structure subassembly of the vehicle, as recited in Claim 1. Moreover, none of the references teaches a dedicated fuel cell system connected as an exclusive supply of electric power to a consuming device, wherein the fuel cell system is electrically isolated from other power generators in the vehicle, and is collocated with an electrical consuming device in a structural component of the vehicle, as recited in Claim 17. Claim 18 distinguishes for similar reasons.

Finally, Claim 19, which is new, recites a power supply system for a vehicle which includes a plurality of individual power sources that are electrically isolated and spatially separated from each other, with each of the individual power supply units being connected to supply electrical power to a respective group of consumers with which it is associated. Claim 19 further recites that each group of consumers is separately located in a different respective vehicle subassembly and is electrically isolated from the other groups of consumers. Finally, it also recites that each of the individual power sources is collocated with the group of consumers with which it is associated, and that the power supply sources comprise fuel cell units. For the reasons set forth above, Claim 19 also distinguishes over the cited references.

Claims 6-9 further distinguish over the cited references, reciting additional details regarding the source of fuel for the fuel cell system. In

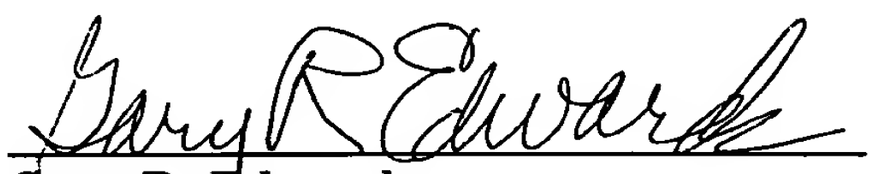
particular, Claim 6 recites that the fuel cell system comprises at least one fuel cell in an assigned fuel supply system for the at least one fuel cell. Accordingly, both the fuel cell itself, and its fuel supply are isolated in the vehicle body component, so that no external connection whatsoever is necessary. Claim 7 further provides that the fuel supply system has an exchangeable fuel storage device, and Claim 8 specifies that the fuel storage device comprises a "hydrogen cartridge". Finally, Claim 9 recites that the system has at least one fuel tank for accommodating a hydrocarbon-containing liquid fuel, and Claim 10 specifies that the fuel supply system further comprises a reforming device for conversion of the fuel to hydrogen. None of these features is taught or suggested by the cited references. In particular, the Wilson et al reference, which as noted previously has been cited as teaching "fuel cells that form a hydrogen cartridge", contains no mention of the source of hydrogen which is used as a fuel in the fuel cell disclosed therein. Column 1, lines 26-40, referred to in the Office Action, merely describe the structure of the fuel cell itself, in which a polymer electrolyte membrane separates the anode chamber and the cathode chamber in the manner described previously. The source of hydrogen for providing fuel to operate the fuel cell in Wilson et al is neither addressed nor disclosed.

In light of the foregoing remarks, this application should be in condition for allowance, and early passage of this case to issue is respectfully requested. If there are any questions regarding this amendment or the application in general,

a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #225/48391).

Respectfully submitted,



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